




Contractor's Perspective on CMGC

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CMGC Experience in Colorado







CMGC vs. Design-Bid-Build

Challenges for a Contractor:

- Proposal Pursuit / Writing / Preparation
- Subjective basis for Selection
- Commitment of Human Capital
- Setting ego aside
- Identification, Mitigation, Assignment of Risk
- Open, transparent approach to estimate review






CMGC vs. Design-Bid-Build

Positives of CMGC for a Contractor :

- Early involvement in design decisions
- Risk identification & mitigation
- Quality of design – we’ve been at the table
 - No “unplanned” change orders
- Pre-Planning Opportunity
- Partnership with Owner, Designer





I-70 / Twin Tunnels CMGC







Innovations on CMGC Projects






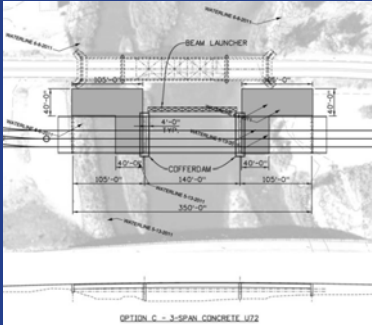



Innovations on CMGC Projects





Innovations on CMGC Projects







Approach to Estimating CMGC

CMGC Estimates – overview :

- OH / Profit already set from Proposal
- Analysis of Costs only
- Open, Honest, Transparent Approach
- Independent Cost Estimator (ICE)







Approach to Estimating CMGC

Opinions of Probable Construction Costs (OPCCs):

- Early Validation Estimate is key
- Estimates at 30% / 60% / 90% Design Levels
- Three rounds at final CAP (Construction Agreed upon Price)
- Still have option to put out for bid – all packages are severable







Approach to Estimating CMGC

From Contractor's Perspective :

- Open, Honest, Transparent approach not always easy – hard to describe risk to owner, ICE
- Quantity reconciliation is key
- Productivity Rates – use cost history






Approach to Estimating CMGC

From Contractor's Perspective :

- Detailed activity level estimates
- Be clear on assumptions – identify risks
- Mobilizations, Jobsite Overhead assumptions
- Education of ICE, Owner (e.g., items incidental to activity of work)



CMGC Cost Model


22348Piling-HP 740 Pile

Quan: 500.00 LFFrs/Shift: 9.00 Cat: 509 WC: C06083

Activity	Desc	Quantity	Unit	Unit Cost	Perm Labor	Job Spec Material	Indirect	Const. Service	Sub-Contract	Total
BID ITEM = 5 CLIENT# = 502-11274 Land Item = SCHEDULE: 1 100 500.000 Engr Quan: 500.000										
Description = STEEL PILING (HP 12X74) Unit = LFTakeoff Quan:										
Unload piling, setup hammer, drive, cutoff										
PI	Piling - 4 man		12.50 CH	Prod:	10,000 UM	Lab Pcs:	4.00	Eng Pcs:	3.00	
SHU1274	BESTPILE - HP 12 x 74	500.00 LF		35,000	17,500					17,500
8CC100	Crane-crawler 85-100t	1.00	12.50 HR	195,000			2,438			2,438
8HPHD19	Pile hammer - D19	2.00	25.00 HR	62,200			1,558			1,558
C	CARPENTER	1.00	12.50 MH	24,000	455					455
CF	CARPENTER FOREMAN	1.00	12.50 MH	25,500	479					479
L	LABOR	1.00	12.50 MH	18,000	388					388
OC	OPER CRANE <90 TN	1.00	12.50 MH	25,480	519					519
\$23,337.46		0.1000 MH/LF	50.00 MH	[2,472]	1,842	17,500	3,996			23,337
10.0000	Unit/MH	* 1.3809 Shifts			3.68	35.00	7.99			46.67

Project Risk – Benefits of CM/GC						
Risk #	Identified Risk	Risk Level	Potential Cost Impacts	Potential Schedule Impacts	Approach to Mitigate Risk	Responsible Party(ies)
1	Low chances in inherent weather	Medium	May be additional cost for construction equipment to support maintenance efforts	If not able to close for blasting will affect the critical path of the schedule	Coordinate with CDDT maintenance to work within possible closures, incorporate flexibility into low adverse energy	CDDT
2	Scope Growth between 50% and 100%	Medium	May result in higher costs due to minor changes	Should have not impact on overall project schedule	Revisit Client's to avoid FPM meetings to attempt to capture potential changes to FPM questions and incorporate into final estimate	ROY/CDDT
3	Random Materials	Low	Additional cost would be incurred to transport materials to disposal site (Off-Site)	May have delays due to supplying of material before hauling off site. Limited on-site dump production	Develop materials management plan and engage CDDT early in process to minimize delays during construction	CDDT
4	Placement of asphalt during winter months	High	May be some additional cost to ensure plant operating when needed and temperatures at subgrade	Will impact opening faster if delayed in placement of asphalt. May cause delay for dry delay to overall project schedule.	Discuss with Asphalt subcontractors, schedule weekly, materials based on time of year anticipated (Early March)	CDDT
5	Wall construction in badlands and rock zones	High	Increased cost for rock excavation at potential blasting	Will slow production in these areas, should not affect overall schedule completion date	Develop as much data as possible during pre-investigation, consider risk paid to other unexpected conditions	CDDT
6	Timing bridge work at new bridge location	Medium	Will increase uncertainty in quantities for foundation elements	Minor potential impacts to overall construction schedule	Perform additional geotechnical investigation at planned infrastructure alignment of new bridge structure	ROY/CDDT
7	Additional costs before wall or roadway to be constructed	Medium	Increased cost for roadway substructure at bridge sites	May require additional time for roadway work	Obtain mapping of existing routes and consider during roadway design	CDDT
8	Potential for Rock Excavation (Bridge, Walls, Drainage)	Medium	Additional cost for blasting	Limited impact to schedule	Identify and further define potential during geotechnical investigation	CDDT

Risk Identification / Mitigation	
Risk :	
Potential for Rock Excavation (Bridge, Walls, Drainage)	
Risk Level :	
Medium	
Potential Cost Impacts :	
Rip / Blast rock excavation - \$ 75 to \$ 100/cy	



Risk Identification / Mitigation


Potential for Rock Excavation (cont.)

Potential Schedule Impacts :
 Limited impacts – crew downtime

Approach to mitigating risk :
 Additional geotechnical investigation during design

Responsible Party :
 Owner

Results of Risk Mitigation :
 Set up F/A item or Risk Pool for rock exc.





Keys to Successful CMGC – A Contractor's Perspective

- Partnership
- Collaboration
- No Egos in the Room
- “No blame, only solutions “
 - FHWA Peer Exchange on CMGC





Opportunities for Contractors in CMGC

- Partner with others that have CMGC Experience
- Subcontracting Opportunities
- Owners looking for best Contractors, not best proposal writers
- Take a chance



